

AMENDMENTS TO THE CLAIMS

Kindly cancel without prejudice all non-elected claims:

Claims 1, 7-11, 21, 22-25, 38-40, 42, 44, 46, 48-52, 54-56,
57, 59, 60-61, 62, 63 if the examiner rejects the
traversal.

Kindly add the following new claims:

Claim 64 (new): A system for detecting the presence of
target substances in samples comprising:

a polymer film waveguide structure including a core
region and a cladding region, said cladding region
containing a plurality of nanowells, each of said
nanowells further containing bound test molecules;

a light excitation source optically coupled to said
waveguide structure, said optical source causing light
to propagate in said waveguide structure, said light
creating an evanescent wave in said cladding region,

said evanescent wave in optical communication with
said bound molecules in said nanowells;

a plurality of fluorescent labels chemically attached
to molecules in said test sample;

a means for causing said test samples with said
chemically attached fluorescent labels to contact said
bound test molecules in said nanowells, whereby said
test samples containing said target substances bind to
said bound test molecules, and said test samples not
containing said target substances remain unbound;
means for detecting said excited fluorescent labels.

Claim 65 (new): The system of claim 64 wherein said
waveguide structure is a thin film.

Claim 66 (new): The system of claim 65 wherein said thin
film is can be supplied rolled up.

Claim 67 (new): The system of claim 64 wherein said
waveguide structure is a single-mode waveguide.

Claim 68 (new): The system of claim 65 wherein said thin film has width between around 8 mm to 32 mm.

Claim 69 (new): The system of claim 65 wherein said thin film is supplied in a cassette.

Claim 70 (new): The system of claim 64 further comprising fluidic channels in fluid communication with said nanowells.

Claim 71 (new): The system of claim 64 wherein said light excitation source is polarized.

Claim 72 (new): The system of claim 64 further comprising said light excitation source operating at a plurality of wavelengths.

Claim 73 (new): The system of claim 72 wherein at least one of said plurality of wavelengths causes heating of said test samples in said nanowells.

Claim 74 (new): The system of claim 64 wherein said cladding layer is cellulose acetate butyrate.

Claim 54 (new): The system of claim 38 further comprising at least one additional layer attached to said cladding layer.

Claim 75 (new): The system of claim 64 wherein said nanowells have dimensions between around 1 micron to 200 microns.

Claim 76 (new): The system of claim 64 wherein said nanowells are formed by UV depletion.

Claim 77 (new): The system of claim 64 wherein said bound molecules are DNA oligos.

Claim 78 (new): The system of claim 64 further comprising a means for detecting said fluorescence.

Claim 79 (new): The system of claim 78 wherein said means for detecting said fluorescence is a photo-multiplier tube.

Claim 80 (new): The system of claim 78 wherein said means for detecting said fluorescence is a charge coupled device.

Claim 81 (new): The system of claim 64 further comprising a means for flushing said nanowells so that said unbound test samples exit said nanowells, whereby said evanescent wave excites only said fluorescent labels on said test samples containing said target substances.

The examiner is requested to enter the new claims and to place the case in condition for allowance at his earliest possible convenience.

Respectfully Submitted:

Clifford Kraft

Clifford H. Kraft
#35,229

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